MC 87-I-34 B(P)

PRELIMINARY REPORT
INDUSTRY SERIES

1987
Census of Manufactures

MC87-I-34B(P)
Issued July 1989

HEATING APPARATUS (EXCEPT ELECTRIC AND WARM AIR FURNACES) AND PLUMBING FIXTURES

Industries 3431, 3432, and 3433

INTRODUCTION

This report presents preliminary statistics from the 1987 Census of Manufactures for those establishments classified in the industries listed above. These data will be superseded by a more comprehensive final paperbound report. The method of data collection and use of administrative data are discussed in detail in the appendix.

All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The definitions of these industries are the same as those used in the 1987 Standard Industrial Classification (SIC) Manual.[1]

INDUSTRY 3431, METAL SANITARY WARE

In the 1987 Census of Manufactures, Industry 3431, Metal Sanitary Ware, had employment of 6.8 thousand. The employment figure was 9 percent below the 7.5 thousand reported in 1982.

The total value of shipments for establishments classified in this industry was $724.9 million.

The cost of materials and services used by establishments in this industry amounted to $327.3 million in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3432, PLUMBING FIXTURE FITTINGS AND TRIM

In the 1987 Census of Manufactures, Industry 3432, Plumbing Fittings and Trim, had employment of 17.1 thousand. The employment figure was 19 percent above the 14.4 thousand reported in 1982. Compared with 1986, employment in 1987 increased 8 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was $2.4 billion.

The cost of materials and services used by establishments in this industry amounted to $1.1 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3433, HEATING EQUIPMENT, EXCEPT ELECTRIC

In the 1987 Census of Manufactures, Industry 3433, Heating Equipment, Except Electric, had employment of 19.9 thousand. The employment figure was 23 percent below the 26.0 thousand reported in 1982.

The total value of shipments for establishments classified in this industry was $2.1 billion.

The cost of materials and services used by establishments in this industry amounted to $957.5 million in 1987. Data on specific materials consumed appear in table 3.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in the tables in this publication:

[1] **Standard Industrial Classification Manual: 1987.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock No. 041-001-00314-2.

Address inquiries to Bureau of the Census, Industry Division, Washington, DC 20233, or call **Davido Dupree** (301) 763-7304.

U.S. Department of Commerce
BUREAU OF THE CENSUS

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-	Represents zero.
(D)	Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
(NA)	Not available.
(NC)	Not comparable.
(S)	Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review.
(X)	Not applicable.
(Z)	Less than half the unit shown.
do	Ditto.
n.e.c.	Not elsewhere classified.
n.s.k.	Not specified by kind.
pt.	Part.
r	Revised.
SIC	Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

CONTACTS FOR DATA USERS

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Current Industrial Reports		
Durables	Malcolm Bernhardt	(301) 763-2518
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Import/Export Publications	Foreign Trade Division	(301) 763-5140
Industry Analysis and Forecasts	International Trade Administration	(202) 377-4356

Table 1. Historical Statistics for the Industry: 1987 and Earlier Years

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix.]

Year[1]	Companies[2] (no.)	All establishments[3]		All employees		Production workers			Value added by manufacture[4] (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories[4] (million dollars)	Ratios	
		Total (no.)	With 20 employees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Specialization (percent)	Coverage (percent)
INDUSTRY 3431, METAL SANITARY WARE															
1987 Census	(NA)	94	40	6.8	171.3	5.2	11.1	114.6	390.3	327.3	724.9	20.4	142.4	(NA)	(NA)
1986 ASM	(NA)	(NA)	(NA)	7.6	188.9	5.8	12.5	138.3	482.5	367.3	845.8	23.6	140.9	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	8.0	178.0	6.2	12.8	128.6	463.3	359.4	827.4	26.1	136.5	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	8.1	172.1	6.4	13.2	125.3	409.3	351.0	755.2	16.8	143.4	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	7.7	159.2	6.0	12.6	116.1	392.8	356.6	737.2	11.1	141.2	(NA)	(NA)
1982 Census	r 78	86	35	7.5	139.4	5.7	10.8	97.0	338.1	303.4	620.3	15.7	127.9	80	97
1981 ASM	(NA)	(NA)	(NA)	7.2	131.2	5.8	12.0	99.8	309.3	228.3	534.4	32.8	74.7	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	7.1	116.8	5.7	11.9	88.8	292.9	212.2	501.7	18.9	69.1	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	7.6	124.0	6.2	13.7	98.9	303.9	256.3	555.1	17.3	72.1	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	8.5	123.6	7.0	15.3	99.5	303.4	250.8	553.5	16.8	70.7	(NA)	(NA)
1977 Census	96	101	37	8.1	109.7	6.7	14.4	87.5	248.7	223.6	477.6	11.3	65.5	82	92
1976 ASM	(NA)	(NA)	(NA)	7.8	106.2	6.2	13.5	79.5	225.9	212.3	436.4	14.3	75.2	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	8.8	95.3	7.0	13.4	71.7	196.5	203.4	398.4	16.4	81.5	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	10.3	104.8	8.1	15.8	78.3	199.8	207.4	405.2	11.7	85.4	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	10.5	106.0	8.8	17.4	84.4	200.8	170.4	361.9	6.8	69.1	(NA)	(NA)
1972 Census	91	95	50	11.2	104.4	9.2	18.5	81.4	208.2	163.0	370.2	8.2	50.7	84	91
INDUSTRY 3432, PLUMBING FIXTURE FITTINGS AND TRIM															
1987 Census	(NA)	178	98	17.1	355.5	13.1	27.5	235.2	1 265.7	1 127.2	2 354.9	61.9	428.4	(NA)	(NA)
1986 ASM	(NA)	(NA)	(NA)	15.9	320.2	12.2	25.3	216.9	1 082.5	909.6	1 982.3	24.7	359.7	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	16.0	308.3	12.4	24.9	210.7	966.4	903.8	1 863.0	[5]45.1	347.5	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	16.3	296.8	12.8	25.0	202.9	942.6	884.9	1 788.4	[5]44.8	337.4	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	15.4	265.6	12.0	23.4	180.9	817.8	759.3	1 557.4	28.3	294.1	(NA)	(NA)
1982 Census	162	186	103	14.4	237.9	11.1	21.2	156.9	672.1	613.8	1 300.5	37.2	258.5	97	93
1981 ASM	(NA)	(NA)	(NA)	17.0	260.3	13.3	25.9	175.1	713.7	731.5	1 425.7	34.5	285.5	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	18.5	248.3	14.4	27.1	168.0	634.0	705.4	1 349.0	33.2	265.0	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	20.1	246.8	16.0	31.2	170.2	608.6	721.5	1 330.3	31.9	278.6	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	19.3	222.8	15.3	29.3	152.3	599.3	628.2	1 220.3	23.3	255.4	(NA)	(NA)
1977 Census	191	213	110	19.3	215.0	15.3	30.0	145.0	579.3	601.6	1 166.4	30.3	239.8	96	92
1976 ASM	(NA)	(NA)	(NA)	18.8	197.1	14.4	27.9	128.0	526.9	510.5	1 023.0	29.3	221.3	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	16.4	161.1	12.4	24.4	103.0	394.2	396.3	803.8	39.2	194.8	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	17.6	152.7	13.5	27.0	98.7	380.5	410.9	778.5	18.3	185.4	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	18.5	160.5	14.2	29.5	106.6	392.4	423.6	787.9	12.3	182.8	(NA)	(NA)
1972 Census	208	231	112	18.6	151.5	14.3	29.2	99.1	361.8	358.7	708.2	19.0	139.5	90	90
INDUSTRY 3433, HEATING EQUIPMENT, EXCEPT ELECTRIC															
1987 Census	(NA)	531	176	19.9	444.4	13.0	26.1	235.4	1 107.1	957.5	2 060.3	42.0	348.0	(NA)	(NA)
1986 ASM	(NA)	(NA)	(NA)	22.4	476.4	15.2	30.1	270.9	1 086.2	1 078.3	2 178.8	45.7	363.3	(NA)	(NA)
1985 ASM	(NA)	(NA)	(NA)	24.0	490.4	16.3	32.5	276.7	1 097.6	1 081.4	2 183.7	58.6	426.3	(NA)	(NA)
1984 ASM	(NA)	(NA)	(NA)	24.0	464.8	16.0	31.2	260.4	1 061.3	1 028.2	2 084.4	47.0	400.8	(NA)	(NA)
1983 ASM	(NA)	(NA)	(NA)	25.9	447.4	17.3	33.4	250.7	997.4	965.4	1 964.5	[5]32.1	404.9	(NA)	(NA)
1982 Census	875	905	260	26.0	443.4	17.1	31.8	245.2	1 042.4	1 023.5	2 082.5	44.0	408.5	90	87
1981 ASM	(NA)	(NA)	(NA)	26.9	427.6	17.9	33.5	232.7	884.5	1 004.2	1 878.3	48.3	369.0	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	32.4	469.2	22.9	43.6	273.3	1 092.7	1 132.2	2 187.2	45.8	411.3	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	30.8	418.4	22.0	43.1	249.3	928.7	1 037.0	1 951.1	39.8	352.9	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	28.7	371.3	20.8	40.1	222.4	830.7	883.5	1 697.8	39.6	307.2	(NA)	(NA)
1977 Census	678	701	194	25.8	312.2	18.7	36.0	190.3	745.6	716.7	1 443.6	32.4	262.6	87	84
1976 ASM	(NA)	(NA)	(NA)	24.0	275.7	16.6	32.6	164.3	583.0	571.1	1 148.6	16.7	227.1	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	28.2	294.7	19.5	36.5	174.7	571.3	573.5	1 168.5	19.1	238.7	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	30.4	302.6	21.5	41.9	186.4	594.8	586.0	1 167.0	30.1	276.2	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	32.0	296.2	23.0	46.2	186.3	616.0	571.6	1 165.3	25.9	249.2	(NA)	(NA)
1972 Census	411	432	191	30.9	268.0	22.0	43.2	164.5	561.6	518.7	1 058.4	24.5	209.6	82	88

Note: Establishments of single unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. Data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were estimated based on administrative-record information from other agencies in conjunction with industry averages. These establishments accounted for the following percent of total value of shipments: SIC 3431, 3%; SIC 3432, 5%; and 3433, 18%.

[1]In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1972, see 1972 Census of Manufactures, vol. II, table 1a of the Industry chapter.

[2]For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

[3]Includes establishments with payroll at any time during year.

[4]Beginning with the 1982 Census of Manufactures, all respondents were requested to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior Censuses and annual surveys of manufactures in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, inventories and value added by manufacture are not comparable to prior-year data.

[5]Estimates for new capital expenditures have associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
3431- —	**METAL SANITARY WARE**						
	Total	**(NA)**	**(X)**	**716.4**	**(NA)**	**(X)**	**455.9**
34310 —	Metal plumbing fixtures:						
34310 10	Enameled iron and metal plumbing fixtures (for additional detail, see Current Industrial Report MQ-34E, Plumbing Fixtures)	(NA)	(X)	528.6	42	(NA)	371.0
34310 98	Other enameled iron and metal plumbing fixtures, including portable chemical toilets, water-closet tanks, and flush tanks	(NA)	(X)	165.0	9	(NA)	65.2
34310 00	Metal sanitary ware, n.s.k., typically for establishments with 10 employees or more (see note)	(NA)	(X)	1.7	(NA)	(X)	1.5
34310 02	Metal sanitary ware, n.s.k., typically for establishments with less than 10 employees (see note)	(NA)	(X)	21.3	(NA)	(X)	18.2
3432- —	**PLUMBING FITTINGS AND BRASS GOODS**						
	Total	**(NA)**	**(X)**	**2 202.4**	**(NA)**	**(X)**	**1 325.3**
34320 —	Plumbing fixture fittings and trim (brass goods):						
	Single lever controls (excluding antiscald):						
	Lavatory:						
34320 01	Metallic ... millions	(NA)	5.8	173.7	13	5.6	123.7
34320 03	Nonmetallic ... do	(NA)					
	Kitchen with spray:						
34320 05	Metallic ... millions	(NA)	3.2	122.1	9	*2.5	62.3
34320 07	Nonmetallic ... do	(NA)					
	Kitchen without spray:						
34320 09	Metallic ... millions	(NA)	2.9	78.6	8	*2.6	52.0
34320 11	Nonmetallic ... do	(NA)					
34320 10	Shower combination, mechanical ... do	(NA)	1.4	34.8	7	(3)	(3)
34320 12	Shower-tub combination, mechanical ... do	(NA)	*2.5	66.7	10	32.6	363.1
34320 14	Shower control only ... do	(NA)	(D)	(D)	(NA)	(NA)	(NA)
34320 13	Tub filler, mechanical ... do	(NA)	(S)	14.5	5	*.1	1.9
	Two and three handle bath and shower fittings (excluding single control):						
34320 15	Bathtub fillers ... millions	(NA)	.6	23.8	12	.7	10.4
34320 17	Shower fittings (with shower heads) ... do	(NA)	1.6	26.5	16	1.0	20.0
34320 18	Shower heads sold separately ... do	(NA)	(S)	21.7	14	1.9	9.9
	Bath tub and shower fittings:						
34320 22	Diverter spout ... millions	(NA)	1.4	25.6	15	.8	23.9
34320 26	Three valve diverter ... do	(NA)	1.3	42.6	12	1.2	24.0
34320 25	Tub and shower control only ... do	(NA)	*.3	7.1	(NA)	(NA)	(NA)
34320 27	Personal showers (hand-held) ... do	(NA)	(S)	22.2	6	.3	6.2
34320 29	Other bath and shower fittings (including stall and gang) ... do	(NA)	(S)	28.3	14	7.8	29.1
	Antiscald bath and shower valves:						
34320 31	Thermostatic controlled fittings ... millions	(NA)	2.1	41.5	10	1.1	28.3
34320 35	Thermopressure controlled fitting ... do	(NA)					
34320 39	Pressure balanced controlled fittings ... do	(NA)					
	Lavatory fittings (excluding single control):						
	4 in. center-set fittings:						
	With pop-up drain:						
34320 90	Metallic ... millions	(NA)	5.3	120.0	15	3.9	63.7
34320 91	Nonmetallic ... do	(NA)	.5	5.5			
	Without pop-up drain:						
34320 92	Metallic ... millions	(NA)	*1.5	38.0	14	*3.8	29.0
34320 93	Nonmetallic ... do	(NA)	(S)	21.7			
	More than 4 in. center-set fittings:						
	With pop-up drain:						
34320 94	Metallic ... millions	(NA)	1.2	53.6	10	1.3	38.3
34320 95	Nonmetallic ... do	(NA)	(D)	(D)			
	Without pop-up drain:						
34320 96	Metallic ... millions	(NA)	*.6	17.3	6	.2	3.5
34320 97	Nonmetallic ... do	(NA)			8	*.6	5.1
34320 49	Basin cocks (one supply line only) ... do	(NA)	(S)	8.7			
	Sink fittings (excluding single control):						
34320 52	Wellmount combination sink faucet ... millions	(NA)	*.5	15.9	8	.5	9.7
	Deck faucet, exposed type:						
34320 54	3 in. to 4 in. deck fitting (rough or plated with or without hose end) (excluding double laundry tray faucets) ... millions	(NA)	(S)	21.1	8	1.3	16.8
	6 in. to 8 in. with spray:						
34320 80	Metallic ... millions	(NA)	*1.3	26.9	12	.9	13.7
34320 82	Nonmetallic ... do	(NA)	(D)	(D)			
	6 in. to 8 in. without spray:						
34320 84	Metallic ... millions	(NA)	*.8	15.3	12	1.0	15.7
34320 86	Nonmetallic ... do	(NA)	(S)	4.6			
	Deck faucet, concealed type:						
34320 57	With spray ... millions	(NA)	.6	20.5	6	.6	10.1
34320 58	Without spray ... do	(NA)	1.5	34.6	7	.8	13.9
34320 59	Single sink faucet (solid flanged female and adjustable male flange) ... do	(NA)	(S)	18.8	4	.4	10.0
34320 63	Other sink fittings (including sink strainers sold separately) ... do	(NA)	(S)	26.5	11	*7.7	25.5
	Drains and overflows (including pop-up drains) sold separately (bath and shower, lavatory, and sink):						
34320 67	Metallic ... millions	(NA)	**1.9	26.3	19	*5.0	52.3
34320 69	Nonmetallic ... do	(NA)	*.3	2.5			
	Miscellaneous items:						
34320 71	IPS mechanical connecting fittings ... millions	(NA)	(S)	18.2	(NA)	(NA)	(NA)
34320 72	Compression stops (including those with drains) ... do	(NA)	27.5	46.7	6	3.2	6.8
34320 74	Solder connecting fittings ... do	(NA)	(D)	(D)	(NA)	(NA)	(NA)
34320 75	Sediment, hydrant, lawn, hose bib, and sill cock faucets ... do	(NA)	(S)	64.6	7	5.0	13.1

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
3432- —	**PLUMBING FITTINGS AND BRASS GOODS**—Con.						
34320 —	Plumbing fixture fittings and trim (brass goods)—Con.						
	Miscellaneous items—Con.						
	P-traps:						
34320 76	Metallic ---- millions	(NA)	(S)	27.7	9	5.0	16.4
34320 78	Nonmetallic ---- do	(NA)	(S)	5.3			
	S-traps:						
34320 47	Metallic ---- millions	(NA)	(S)	14.0	7	1.3	5.6
34320 48	Nonmetallic ---- do	(NA)	(S)	4.2			
34320 81	Lawn hose nozzles and lawn sprinklers ---- do	(NA)	(S)	226.6	18	(S)	134.6
34320 83	Water closet tank flushing controls (except flush valves) ---- do	(NA)	(S)	1.0	7	(D)	(4)
34320 85	Flush valves (for gravity type flush tanks) ---- do	(NA)	(D)	(D)	5	(D)	(4)
34320 87	Flushometer valves ---- do	(NA)	(D)	(D)	(NA)	.9	(NA)
34320 89	Double laundry tray faucets ---- do	(NA)	4	4.1	5	5	3.1
34320 99	Other miscellaneous items and accessories ---- do	(NA)	(S)	338.2	56	(S)	4302.2
34320 00	Plumbing fixtures and brass goods, n.s.k., typically for establishments with 5 employees or more (see note) ----	(NA)	(X)	81.0	(NA)	(X)	41.1
34320 02	Plumbing fixtures and brass goods, n.s.k., typically for establishments with less than 5 employees (see note) ----	(NA)	(X)	72.3	(NA)	(X)	40.4
3433- —	**HEATING EQUIPMENT, EXCEPT ELECTRIC**						
	Total ----	**(NA)**	**(X)**	**2 077.6**	**(NA)**	**(X)**	**1 962.3**
34333 —	Cast iron heating boilers, radiators, and convectors, except parts ----	(NA)	(X)	372.4	(NA)	(X)	224.1
34333 17	Cast iron boilers (including oil, gas, and solid fuel) (for additional detail, see Current Industrial Report MA-34N, Selected Heating Equipment) ----	(NA)	(X)	284.8	13	(X)	174.7
34333 60	Radiators and convectors: Cast iron (for additional detail, see Current Industrial Report MA-34N, Selected Heating Equipment) ----	(NA)	(X)	(5)	4	(X)	12.3
34333 81	Steel, residential and industrial ---- mil sq ft	(NA)	20.6	10.8	4	(S)	3.1
34333 77	Aluminum and other nonferrous metal (including baseboard and finned tube type, residential, industrial, and special types) ---- do	(NA)	41.2	55.2	9	72.4	33.2
34333 00	Cast iron heating boilers, radiators, and convectors, except parts, n.s.k. ----	(NA)	(X)	521.6	(NA)	(X)	.8
34334 —	Domestic heating stoves, except electric (excluding parts):						
34334 00	Domestic heating stoves, except electric (excluding parts) (for additional detail, see Current Industrial Report MA-34N, Selected Heating Equipment) ----	(NA)	(X)	262.2	121	(X)	310.2
34335 —	Steel heating boilers (15 p.s.i. or less), and all hot water boilers, excluding parts ----	(NA)	(X)	122.3	(NA)	(X)	90.9
34335 12	400,000 Btu/hr or less ---- thousands	(NA)	(S)	46.0	22	**50.2	50.4
34335 15	Gross output of these boilers ---- 1,000 Btu/hr	(NA)	(S)	(X)	(NA)	136 902.1	(X)
	400,001 Btu/hr or more:						
34335 31	Scotch type ---- thousands	(NA)	(D)	(5)	9	**.9	13.3
34335 35	Gross output of these boilers ---- 1,000 Btu/hr	(NA)	(S)	(X)	(NA)	142 734.9	(X)
34335 44	Other, including horizontal fire box ---- thousands	(NA)	(S)	530.1	13	**9.2	26.0
34335 46	Gross output of these boilers ---- 1,000 Btu/hr	(NA)	(S)	(X)	(NA)	903 812.9	(X)
34335 00	Steel heating boilers (15 p.s.i. or less), excluding parts, n.s.k. ----	(NA)	(X)	46.2	(NA)	(X)	1.1
34338 —	Floor and wall furnaces, unit heaters, infrared heaters, and mechanical stokers ----	(NA)	(X)	326.4	(NA)	(X)	272.1
34338 20	Floor and wall furnaces (for additional detail, see Current Industrial Report MA-34N, Selected Heating Equipment) ----	(NA)	(X)	52.6	15	(X)	48.9
	Unit heaters:						
34338 30	Gas fired, 400,000 Btu/hr or less (for additional detail, see Current Industrial Report MA-34N, Selected Heating Equipment) ----	(NA)	(X)	137.1	15	(X)	63.5
34338 32	Steam or hot water heating element, centrifugal fan type (blower) and propeller fan type ---- thousands	(NA)	(S)	19.4	8	(S)	16.1
34338 38	Gas fired infrared heaters ---- do	(NA)	**117.3	28.5	18	262.6	100.6
34338 54	Mechanical stokers (for additional detail, see Current Industrial Report MA-34N, Selected Heating Equipment) ----	(NA)	(X)	12.8	10	(X)	17.6
34338 88	Parts for floor and wall furnaces, unit heaters, gas fired infrared heaters, and mechanical stokers ----	(NA)	(X)	49.0	15	(X)	25.3
34338 00	Floor and wall furnaces, unit heaters, infrared heaters, and mechanical stokers, n.s.k. ----	(NA)	(X)	22.7	(NA)	(X)	-
34339 —	Other heating equipment, except electric ----	(NA)	(X)	786.2	(NA)	(X)	888.2
34339 10	Oil burners (sold separately), except range type (for additional detail, see Current Industrial Report MA-34N, Selected Heating Equipment) ----	(NA)	(X)	98.5	27	(X)	82.5
34339 15	Oil burners, range type (sleeve and pot type for use in water heaters, stoves, ranges, etc.) ---- thousands	(NA)	(D)	(D)	4	**52.5	10.5
	Gas burners for residential, commercial, and industrial furnaces, boilers, and water heaters:						
34339 16	400,000 Btu/hr or less ---- thousands	(NA)	148.0	109.4	21	(S)	21.2
34339 18	400,001 Btu/hr or more ---- do	(NA)	32.3	54.7	22	(S)	53.4
34339 19	Parts and attachments for gas burners (sold separately) ----	(NA)	(X)	10.0	17	(X)	13.5
	Commercial and industrial:						
34339 45	Heat transfer coils (blast coils) ----	(NA)	(X)	(D)	5	(X)	3.6
34339 50	Range boilers, expansion tanks (including basement tanks) and hot water storage tanks (for additional detail, see Current Industrial Report MA-34N, Selected Heating Equipment) ----	(NA)	(X)	19.0	12	(X)	13.2

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
3433- --	**HEATING EQUIPMENT, EXCEPT ELECTRIC**—Con.						
34339 --	Other heating equipment, except electric—Con.						
	Commercial and industrial—Con.						
34339 60	Unit ventilators ---- thousands	(NA)	277.3	17.7	11	(S)	20.3
34339 61	Tanks for water heaters (sold separately) ---- do	(NA)	(D)	(D)	4	83.3	6.2
34339 71	Nonelectric prefabricated metal fireplaces, all types ---- do	(NA)	225.1	96.5	9	74.9	24.8
34339 75	Solar energy collectors (water or air) (for additional detail, see Current Industrial Report MA-34N, Selected Heating Equipment[4])	(NA)	(X)	11.7	53	(X)	66.0
	Parts and attachments:						
34339 85	For oil burners	(NA)	(X)	19.3	17	(X)	38.3
34339 99	Other heating equipment (including dual fired gas and oil burners and other parts for heating equipment, except electric; sold separately)	(NA)	(X)	207.2	121	(X)	519.4
34339 00	Other heating equipment, except electronic, n.s.k.	(NA)	(X)	125.9	(NA)	(X)	15.3
34330 --	Heating equipment, n.s.k.	(NA)	(X)	213.0	(NA)	(X)	176.7
34330 00	Heating equipment, n.s.k., typically for establishments with 20 employees or more (see note)	(NA)	(X)	142.5	(NA)	(X)	106.7
34330 02	Heating equipment, n.s.k., typically for establishments with less than 20 employees (see note)	(NA)	(X)	69.5	(NA)	(X)	70.0

Note: In 1987 Census of Manufactures, data for establishments of small single unit companies with up to 20 employees were estimated from administrative-records data rather than data actually collected from respondents. Employment cutoffs used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1987 and 1982 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriateproduct class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

[1]Data reported by all producers, not just those with shipments of $100,000 or more.
[2]For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).
[3]For 1982, product code 34320 10 is combined with product code 34320 12 to avoid disclosing data for individual companies.
[4]For 1982, product codes 34320 83 and 34320 85 are combined with product code 34320 98 to avoid disclosing data for individual companies.
[5]For 1987, product code 34333 60 is combined with product code 34333 90.
[6]For 1987, product code 34335 31 is combined with product code 34335 44.

Table 3. Materials Consumed by Kind: 1987 and 1982

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity[1]	Delivered cost (million dollars)	Quantity[1]	Delivered cost (million dollars)
	INDUSTRY 3431, METAL SANITARY WARE				
	Materials, parts, containers, and supplies ----	**(X)**	**283.2**	**(X)**	**232.6**
	Mill shapes and forms, except castings:				
331001	Carbon steel ---- 1,000 s tons	(S)	50.2	28.5	15.9
331020	Alloy steel, except stainless ---- do	(D)	(D)	(D)	(D)
331031	Stainless steel ---- do	*29.7	51.2	(D)	(D)
	Copper and copper base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes ---- mil lb	(S)	12.1	7.2	7.4
335143	Plate, sheet, and strip, including military cups and discs ---- do	(D)	(D)	(S)	(Z)
335152	Pipe and tube ---- do	(S)	3.7	(D)	(D)
333122	Copper and copper-base alloy refinery shapes ---- 1,000 s tons	(D)	(D)	(D)	(D)
	Castings (rough and semifinished):				
332011	Iron (gray and malleable) ---- 1,000 s tons	(D)	(D)	(S)	.3
332045	Steel ---- do	(S)	.4	(D)	(D)
336005	Aluminum and aluminum-base alloy ---- mil lb	(D)	(D)	(D)	(D)
336006	Copper and copper-base alloy ---- do	(S)	1.4	(D)	(D)
336008	Other nonferrous ---- do	(D)	(D)	(NA)	(NA)
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes ---- do	(X)	1.4	(NA)	(NA)
308006	Fabricated plastics products, except gaskets	(X)	4.1	(X)	2.8
265001	Paperboard containers and boxes and corrugataed paperboard	(X)	15.8	(NA)	(NA)
329300	Gaskets (all type) and asbestos packing	(X)	.8	(X)	.2
346901	Metal stampings	(X)	17.0	(X)	15.5
349012	Fabricated wire products	(X)	.7	(X)	-
970099	All other materials and components, parts, containers, and supplies	(X)	59.1	(X)	90.9
971000	Materials, parts, containers, and supplies, n.s.k.[2]	(X)	11.6	(X)	8.7

See footnotes at end of table.

Table 3. **Materials Consumed by Kind: 1987 and 1982**—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material		1987		1982	
			Quantity[1]	Delivered cost (million dollars)	Quantity[1]	Delivered cost (million dollars)
	INDUSTRY 3432, PLUMBING FIXTURE FITTINGS AND TRIM					
	Materials, parts, containers, and supplies		**(X)**	**1 026.8**	**(X)**	**573.8**
	Mill shapes and forms, except castings:					
331001	Carbon steel	1,000 s tons	(S)	1.4	(D)	(D)
331020	Alloy steel, except stainless	do	(D)	(D)	(D)	(D)
331031	Stainless steel	do	(S)	8.6	(S)	12.3
	Copper and copper-base alloy:					
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes	mil lb	(S)	104.8	**133.7	91.7
335143	Plate, sheet, and strip, including military cups and discs	do	7.2	6.9	30.3	19.9
335152	Pipe and tube	do	*31.8	28.2	33.9	36.6
333122	Copper and copper-base alloy refinery shapes	1,000 s tons	(S)	34.5	**15.2	13.0
	Castings (rough and semifinished):					
332011	Iron (gray and malleable)	1,000 s tons	(S)	9.4	(D)	(D)
332045	Steel	do	(D)	(D)	(D)	(D)
336005	Aluminum and aluminum-base alloy	mil lb	(S)	2.0	(S)	1.5
336006	Copper and copper-base alloy	do	(S)	113.0	(S)	78.8
336008	Other nonferrous	do	(S)	22.6	(NA)	(NA)
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes		(X)	34.1	(NA)	(NA)
308006	Fabricated plastics products, except gaskets		(X)	73.8	(X)	46.8
265001	Paperboard containers and boxes and corrugated paperboard		(X)	34.3	(NA)	(NA)
329300	Gaskets (all type) and asbestos packing		(X)	7.3	(X)	9.5
346901	Metal stampings		(X)	26.4	(X)	7.2
349012	Fabricated wire products		(X)	1.6	(X)	1.2
970099	All other materials and components, parts, containers, and supplies		(X)	418.2	(X)	168.4
971000	Materials, parts, containers, and supplies, n.s.k.[2]		(X)	69.4	(X)	39.4
	INDUSTRY 3433, HEATING EQUIPMENT, EXCEPT ELECTRIC					
	Materials, parts, containers, and supplies		**(X)**	**855.3**	**(X)**	**861.5**
	Mill shapes and forms, except castings:					
	Carbon steel:					
331011	Bars and bar shapes	1,000 s tons	**5.5	3.0	(S)	10.8
331012	Sheet and strip	do	(S)	94.6	*276.9	130.2
331013	Plates	do	(S)	12.0	*91.9	57.3
331015	Structural shapes	do	(S)	27.5	(S)	21.8
331006	All other carbon steel mill shapes and forms	do	(S)	.9	(NA)	(NA)
331020	Alloy steel, except stainless	do	(D)	(D)	*15.2	9.7
	Stainless steel:					
331033	Sheet and strip	1,000 s tons	(S)	12.9	(S)	20.6
331050	All other	do	(S)	5.7	**1.1	2.8
	Copper and copper-base alloy:					
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes	mil lb	*2.5	.7	(S)	1.7
335143	Plate, sheet, and strip, including military cups and discs	do	(S)	.4	**4.6	4.2
335152	Pipe and tube	do	(S)	10.6	**5.9	9.4
335001	Aluminum and aluminum-base alloy	do	**6.5	7.1	(NA)	(NA)
331051	Pig iron, excluding silvery iron	1,000 s tons	(D)	(D)	48.7	6.7
190023	Iron and steel scrap, excluding home scrap	do	66.0	6.1	95.2	7.1
	Castings (rough and semifinished):					
332011	Iron (gray and malleable)	1,000 s tons	**34.0	30.6	*55.2	68.2
336005	Aluminum and aluminum-base alloy	mil lb	(S)	2.2	**5.0	3.4
336006	Copper and copper-base alloy	do	(S)	1.7	.3	.9
345001	Bolts, nuts, screws, rivets, and screw machine products		(X)	16.1	(X)	7.1
346901	Metal stampings		(X)	9.1	(X)	11.2
349402	Fabricated metal pipe, valves, and pipe fittings		(X)	16.1	(X)	12.3
	Electric motors and generators:					
	Fractional horsepower electric motors (less than 1 hp):					
362110	Timing motors, synchronous and subsynchronous	millions	(S)	1.0	(S)	9.6
362115	Other fractional horsepower electric motors, excluding timing motors	thousands	(S)	12.5	*926.8	14.2
362120	Integral horsepower motors and generators (1 hp or more)	do	395.9	8.5	(S)	3.5
382201	Automatic temperature controls (thermostats, regulators, etc.)		(X)	55.5	(X)	33.6
343309	Parts and attachments specially designed for heating equipment, except electric		(X)	43.7	(X)	46.7
265001	Paperboard boxes, containers, and corrugated paperboard		(X)	14.5	(X)	10.8
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels		(X)	4.8	(X)	4.5
970099	All other materials and components, parts, containers, and supplies		(X)	109.8	(X)	218.3
971000	Materials, parts, containers, and supplies, n.s.k.[2]		(X)	338.9	(X)	106.3

[1]For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

[2]Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

APPENDIX
Scope and Coverage and Explanation of Terms

GENERAL

The 1987 Census of Manufactures is the 32nd census of manufacturing establishments conducted in the United States. For 1987, it was conducted as part of the economic censuses, which included the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses, under authority of title 13 of the United States Code. Title 13 specifies that an economic census be conducted every 5 years to cover years ending in 2 and 7.

SCOPE AND COVERAGE

Establishment Basis of Reporting

The census of manufactures is conducted on an establishment basis. All manufacturing establishments with one paid employee or more at any time during the year are covered by the census of manufactures. Therefore, a company operating at more than one location is required to file a separate report for each location. This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units which service manufacturing establishments of the same company. Where these auxiliary operations are conducted at the same location as the manufacturing operation, they are usually included in the report for the operating manufacturing establishment.

Use of Administrative Records

From a universe of approximately 350,000 manufacturing establishments in the 1987 Census of Manufactures, approximately 150,000 small single-establishment companies were excused from filing reports. Selection of the small establishment nonmail cases was done on an industry-by-industry basis. A variable cutoff was used to determine those establishments for which administrative records were to be used in place of a census report. The cutoffs were selected so the administrative-record cases would account for approximately 3 percent or less of the value of shipments for the industry. These cutoffs were then adjusted so that all single-establishment companies with less than 5 employees were excluded from the mail canvass, while all establishments with more than 20 employees were included. Where establishments in the 5 to 20 employee size range were included in the mail canvass, an abbreviated census form was frequently used.

For these nonmail establishments, (and a small number of larger establishment whose reports were not received at the time the data were tabulated) data on employment, payroll, and receipts were obtained from administrative records of other government agencies rather than from census forms. The administrative-record information was then used in conjunction with industry averages to estimate the data for these establishments. The value of shipments and cost of materials were not distributed among specific products and materials but were included in the product and material "not specified by kind" (n.s.k.) categories.

EXPLANATION OF TERMS

Number of establishments and companies–A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

All employees–Includes all full-time and part-time employees on the payrolls at any time during the year. Included are all persons on paid sick leave, paid holidays, and paid vacations. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average of those for midmonth payroll periods of March, May, August, and November.

Production workers–Includes workers up through the working-supervisor level engaged in fabricating, processing, assembling, inspecting, receiving, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial, guard services, product development, auxiliary production for plant's own use (e.g., powerplant), recordkeeping, and other closely associated services. Truckdrivers delivering ready-mixed concrete are also included in production workers.

Other employees–Includes nonproduction personnel, including those engaged in the following activities: supervision above working-supervisor level, sales (including driver/salespersons), sales delivery (truckdrivers and helpers), advertising, credit collection, installation and

servicing of own product, clerical and routine office functions, executive, purchasing, finance, legal, personnel (including cafeteria, etc.), professional, and technical employees.

Payroll–Includes the gross earnings for the "employees" defined above, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. Respondents were told that in reporting they could follow the definition of payrolls used for calculating the Federal withholding tax.

Production-worker hours–Covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave when the employee was not at the plant.

Cost of materials–Refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuels consumed, regardless of whether they were purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (a) all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year; (b) electric energy purchased; (c) fuels consumed for heat, power, or generating electricity; (d) work done by others on materials or parts furnished by manufacturing establishments (contract work); and (e) products bought and resold in the same condition.

Specific materials consumed (table 3)–In addition to the total cost of materials which every establishment was required to report, information was also collected for most manufacturing industries on the consumption of major materials used in manufacturing. These inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. Establishments consuming less than a specified amount (usually $10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which administrative records were used was estimated as "not specified by kind" (n.s.k.).

Value of shipments and other receipts–Generally refers to received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts such as receipts for contract work performed for others, installation and repair receipts, sale of scrap, and sale of products bought and resold without further processing. Included are all items made by or for the establishment from materials owned by it whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In a few industries, the value of production or value of work completed is used instead of value of shipments. These industries are identified in the introduction and are footnoted in table 1.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, that is, including not only the direct costs of production but also a reasonable proportion of "all other costs" (including company overhead and profit).

Shipments or production of individual products (table 2)–In the 1987 census, detailed shipment information was collected for approximately 11,000 individual products. These products are identified by a seven-digit code and are grouped into approximately 1,500 classes of products, which in turn are primary to 459 four-digit industries. Data at the five-digit product-class level have been collected each year as part of the annual survey of manufactures. Information at the seven-digit level, collected for many industries in the current industrial reports program, is not included in this table.

Value added by manufacture–This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments for products manufactured plus receipts for services rendered. The result of this calculation is then adjusted by the addition of value added by merchandising operations (that is, the difference between the sales value and cost of merchandise sold without further manufacturing, processing, or assembly) plus the net change in finished goods and work-in-process inventories between the beginning and end of the year.

For those industries where value of production is collected instead of value of shipments (see footnote in table 1), value added is adjusted only for the change in work-in-process inventories between the beginning and end of the year. For those industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

Value added avoids the duplication in the figure for value of shipments which results from the use of products of some establishments as materials by others. Value

added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

Expenditures for new plant and equipment–Establishments in operation and any known plants under construction were asked to report their expenditures for (a) permanent additions and major alterations to manufacturing establishments and (b) new machinery and equipment used for replacement and additions to plant capacity if they are of the type for which depreciation accounts are ordinarily maintained.

These totals exclude expenditures for used plant and equipment, expenditures for land, and cost of maintenance and repairs charged as current operating expenses. Data for used plant and equipment will be published in the final industry bulletin.

End-of-year inventories–Comprised of (a) finished products; (b) work-in-process; and (c) materials, supplies, fuels, etc. Beginning in 1982, respondents were asked to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior years in which respondents were permitted to value their inventories using any generally accepted accounting method. Therefore, 1982 through 1987 data for inventories are not strictly comparable to prior-year data.

Specialization and coverage ratios–An establishment is classified in a particular industry if its shipments of primary products of the industry exceed in value its shipments of the products of any other single industry. An establishments' shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). The following ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in table 1 and data on product shipments shown in table 2.

Specialization ratio–Represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio–Represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments, wherever classified.